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CALLOBIUS GUACHAMA (ARANEAE, AMAUROBIIDAE): HABITAT, DISTRIBUTION AND DESCRIPTION OF THE FEMALE

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ABSTRACT. On the basis of one male specimen, *Callobius guachama* Leech 1972 was first established during the familial revision of the Amaurobiidae. We have collected additional specimens of this spider and, herein, provide a description of the female as well as notes regarding the habitat and distribution of this large, montane spider.

In the familial revision of the Amaurobiidae (Leech 1972), *Callobius guachama* was named on the basis of a single mature male spider collected inside a domicile near the foothills of the San Bernardino mountains. We have recently collected additional specimens in natural environments or have had specimens sent to the University of California Riverside Department of Entomology for identification. In addition to providing habitat and collection information for the species, we describe the female of *Callobius guachama* for the first time.

Leech (1972) states that the internal genitalia for all amaurobiid genera except *Titanoeca* Thorell 1870 are not useful for taxonomic differentiation at the species level. Therefore, in remaining consistent with the familial revision, we configure here the ventral and posterior views of the *C. guachama* epigynum. Also, only the diagnostic characteristics of the male palp (i.e., tibia, median apophysis) were illustrated in the familial revision. As a record of completeness for this species, we include conventional ventral and lateral views of the entire male palp of *C. guachama*.

METHODS

All preserved specimens were examined under alcohol and measured with a Wild 5A microscope fitted with an ocular micrometer; all measurements are in millimeters. If the abdomen of an alcohol specimen did not appear shriveled or was not damaged in the collection process, body length measurements were taken. Several spiders were collected as immatures, as reflected in the collection data, but were maintained in the laboratory and examined as preserved mature specimens. Physical description of the female is presented from live specimens as well as preserved material. The physical characteristics for the males examined here follow that of Leech (1972) for the holotype. The acronyms used in this paper are as follows: AMNH–American Museum of Natural History, N. Platnick; BRH–B.R. Hébert (pers. collection); CAS–California Academy of Science, C. Griswold; DEB–D.E. Bixler (pers. collection); MCZ–Museum of Comparative Zoology, H. Levi; RSV–R.S. Vetter (pers. collection); TRP–T.R. Prentice (pers. collection); UCR–Entomology Museum, University of California–Riverside; WRI–W.R. Icenogle (pers. collection).

Callobius guachama Leech
Figures 1–6

Callobius guachama Leech 1972: 53, figs. 84a, b, ♂. Male holotype from San Bernardino [San Bernardino County], California, in AMNH, examined.

Diagnosis.—*Callobius guachama* can be separated from other species of *Callobius* Chamberlin 1947 (except *C. nevadensis* (Simon 1884) and *C. severus* (Simon 1884) by its larger size and from all species by genitalic differences. Mature specimens of *C. guachama* are consistently large whereas other *Callobius* species (e.g., *nevadensis*, *severus*, *pictus* (Simon) 1884 and *C. arizonicus* (Chamberlin & Ivie 1947) may only occasion-

ally attain this size; most are medium-sized (10–13 mm) spiders (Leech 1972).

The males of *C. guachama* have the largest median apophysis (>1 mm) of any *Callobius* currently known, whereas median apophyses in both *C. nevadensis* and *C. severus* are 0.9. Additionally, the median apophysis in *C. guachama* has two distinct, subequal, well-rounded notches, whereas in *C. nevadensis* the anterior notch is much smaller than the posterior and in *C. severus* notches are not rounded and are poorly defined with an indistinct cusp when evident.

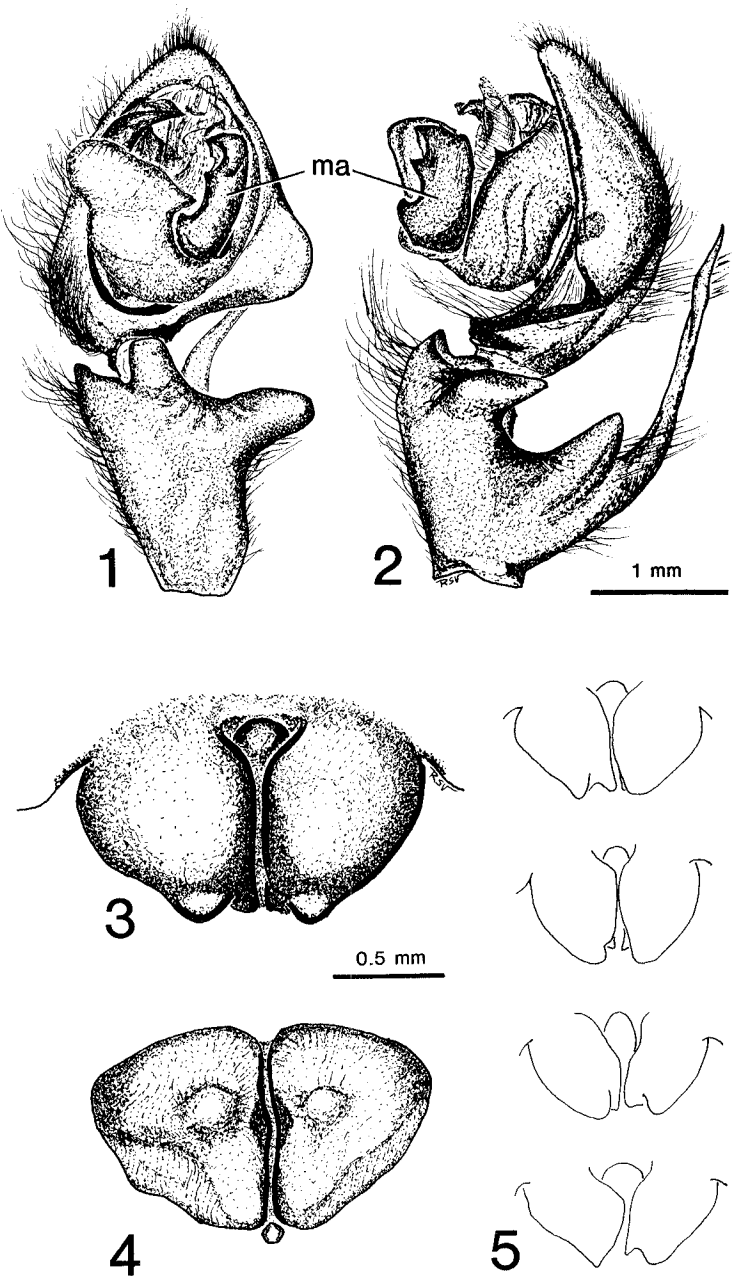
The female of *C. guachama* can be distinguished from all other *Callobius* species except *C. severus* by having a diminutive posterior lobe and from *C. severus* by having ectal margins of lateral lobes (posterior view) that are very robust and not broadly excavated.

Description.—*Male:* Overall length, 11–15, cephalothorax, 6.6–8.2 length, 4.4–5.7 width (at Leg III). Length of median apophysis, 1.00–1.22. In preserved specimens, abdomen varies in coloration from gray-to-brown and cephalothorax is sometimes uniformly orange, lacking the cephalic darkening noticed in the holotype and some of our specimens. The male palp is shown in Figs. 1, 2. Considering the diagnostic characteristics of palpal tibia and median apophysis, the male structures were consistent in their appearance with minor variation in size. The median apophysis consistently had two well-rounded notches of equal depth, the width of the anterior notch being slightly smaller than the posterior and a pointed cusp rising up to separate them.

Female: Overall length, 15–20, cephalothorax, 7.0–8.4 length, 4.7–6.2 width. Epigynum, width, 1.4–1.74, measured across epigynum at the point where anterior margins of the lateral lobe intersect the transverse ectal margins. Color of legs and carapace usually light to dark chestnut, less often yellow-brown, cephalic region darker especially in subadults and adults; chelicerae dark usually appearing black; maxillae and labium also dark; tarsus of palp darker than proximal segments; abdomen usually dark grey with 2–3 pairs of faint, sometimes indistinguishable anterodorsal light orange-tan markings, most anterior pair usually appearing as longitudinal bands extending posteriad from anterior margin, 2nd and 3rd pair usually subcircular corresponding to the dimples of muscle-impressions; venter dark, similar to carapace except light yellowish or tan regions of book lungs.

The epigyna (ventral view) with round-to-ovoid median lobe, lateral lobes as long as wide or slightly longer than wide, ectal lobes lacking and posterior lobe diminutive (posterior view), round-to-pentagonal in shape, width approximately $\frac{1}{7}$ width of lateral lobe (Figs. 3, 4). Epigynum highly variable, asymmetrical in about half of specimens examined (total = 22, 6 slightly asymmetric, 6 very asymmetric). The posteriad protuberances on the lateral lobes contiguous with the posterior marginal line of the lateral lobe or protruded noticeably beyond. However, consistencies were noted in the diminutive posterior lobe and the robust nature of the lateral lobes in posterior view (Fig. 4). Outlines of epigyna are presented in Fig. 5 to show both variation and asymmetry.

Material examined.—Holotype male (AMNH), 25♂22♀26 imm. **CALIFORNIA:** *Kern County*, Tehachapi Mts., Paradise Valley (elev. 5000 ft.), 18 May 1960, 5 June 1960, in house, 2♂, W. Icenogle (WRI). *Los Angeles County*, San Gabriel Mts. (elev. 4800 ft.), Glendora Ridge, 4 August 1994, under road culvert, 1♀, T. Prentice (TRP); Soldier Creek (elev. 3740 ft.), 11 August 1994, 1imm.♀, T. Prentice (TRP). *Riverside County*, San Jacinto Mts., Idyllwild (elev. 5400 ft.), 24 June 1969, 1♂, H.E. Brown (UCR); late November 1996, in house, 1♀, C. Hamilton (RSV). *San Bernardino County*, San Bernardino (elev. 1150 ft.), 1 July 1969, in house, 1♂ (holotype), R. Miller (AMNH); San Bernardino Mts., Big Bear Lake (elev. 6750 ft.), 13 May 1994, in house, 1♂; 4 June 1994, in house, 1♀, N. Kohl (RSV); 29 August 1994, 1♀ (RSV); no date, 1♂ (RSV); 30 June 1995, 1♂ (RSV); 26 July 1995, in house in web in ceiling corner, 1♀, A. Sayles (RSV); 24 October 1995, in home on staircase 0300 h, 1♀, J. Reisman (RSV); early June 1996, in home in web, 1♂, J. Castiglioni (RSV); Crestline (elev. 5200 ft.), 29 May 1996, on bedroom ceiling, 1♂, K. McKinley (RSV); Fish Creek (elev. 6550 ft.), 8 June 1995, under bark, 3♀, T. Prentice (TRP); Forest Falls (elev. 7000 ft.), 17 May 1987, in house, 1♂ (DEB); Lake Arrowhead (elev. 5000 ft.), 30 April 1991, in cabin, 1♀, M. Laurich (BRH), 13 June 1995, in house,



Figures 1–5.—*Callobius guachama* Leech. 1, Male left palp, ventral view. 2, Left Palp, lateral view. *ma* = median apophysis. 3, Epigynum, ventral view;., 4, Epigynum, posterior view; 5, Outline of epigyna (ventral view) showing variation and asymmetry.

1♂, P. Kimble (RSV); Lost Creek (elev. 7400 ft.), 17 May 1995, under fir stump, 200 ft. from creek, 1♀, T. Prentice (TRP); Mountain Home Creek, E. fork (elev. 5000 ft.), 29 March 1995, 2♂1♀4imm, 26 April 1995, 2♀, T. Prentice (TRP); Running Springs (elev. 6050 ft.), June 1994, in house, 1♂ (RSV); 6 June 1995, 2♂1penult♀ (RSV); 28 July 1995, in house, 1♀, S. Swinson (RSV); Santa Ana River (elev. 5500–6550 ft.), 15 November 1994, 1♀1penult♂; 30 March 1995, 1♂3imm♀; 10 May 1995, under bark of fir

Figure 6.—Geographical distribution of *Callobius guachama* (map from U.S. Geological Survey, Denver, Colorado).

tree, 2♀, T. Prentice (TRP); Seven Oaks (elev. 5600 ft.), 5 May 1996, under garbage can, under bark, 4imm, 17–19 May 1996, under loose bark of fallen pine trees, 2♂1♀12imm, R. Vetter (RSV); Sugarloaf (elev. 7050 ft.), 27 June 1995, in kitchen sink, 1♀, 3 July 1995, in bathroom, 1♂, K. Vargas (RSV); Twin Peaks (elev. 5400 ft.), no date, 1♂, W. Sears (UCR), 22 April 1996, in bathroom, 1penult♂, 23 May 1996, in toy chest, 1♂, C. Wormald (RSV); June–July 1996, under trash, 3imm, K. Wormald (RSV); 13 July 1996, in house, 1♂, C. Hinkleman (RSV).

We have deposited several specimens of each sex at both AMNH and CAS. Most of the remainder are deposited at UCR or TRP collections.

DISCUSSION

Callobius guachama is a montane spider found in southern California from 1150–2250 m elevation on at least four mountain ranges (San Jacinto, San Bernardino, San Gabriel and Tehachapi; Fig. 6). The last three of these ranges are contiguous, while the more southern San Jacinto mountains are separated from the nearby San Bernardino mountains by a narrow pass of 600 m elevation.

In contrast to the other specimens we obtained in this study, the holotype male was

described from the densely-populated urban area (Norton Air Force Base, elev. 300 m) near the foothills of the San Bernardino mountains. All specimens presented to us by the public have come from the sparsely-populated mountain communities. If *C. guachama* does live in the lowlands, it is surprising to us that more specimens have not been turned in to authorities for identification. It appears possible that the holotype may have been transported from an area of higher elevation to its collection site.

Callobius guachama is found in natural rock outcroppings, under bark of dead fir and pine trees, in deep crevices of living cedar, pine and fir or in human-altered environments such as under road culverts and highway underpasses. It also is occasionally discovered in domiciles in the mountain communities, at times causing great alarm to the human inhabitats who fear that this large spider is dangerous. Most *C. guachama* males in this study were found in homes (probably searching for mates) and were subsequently destructively captured and brought in for identification, but a few females were also similarly collected. Most of the spiders collected by the lay community were found in the warm months of May–August, with one female being taken in a house in late November; our field-collected spiders were taken from late March to November. The areas in which these spiders have been collected have winter temperatures routinely below 0 °C with extended periods of snow cover (some of these locales are popular winter tourism areas). *Callobius guachama* has been active when temperatures were as low as 8 °C; one spider was taken at dawn while it crawled on a wall in an unheated campground washroom.

Using the *Callobius* key provided in Leech (1972), all of the males in this study emerge as *guachama*. Females of *C. guachama* uniformly can be keyed out to having two ventral (4 total) spines distally located on metatarsi I and II (couplet 25b) and usually 3 or 4 spines proximally on metatarsi I and II (couplet 40a) although some had 1 or 2 metatarsi with as few as 2 and as many as 6 spines. From this point, the posterior lobe of the epigynum is diminutive which would key out to *C. severus* (couplet 41b; one of two times the female of this species emerges in the key). (We use here the term "diminutive" whereas Leech used the term "vestigial". As a reviewer correctly pointed out, this latter term denotes an evolutionary derivation of a structure once functional). One might amend the key to incorporate the female of *C. guachama* by adding at this point, "in posterior view, diminutive posterior lobe with robust lateral lobes".

Finally, because of the depauperate *Callobius* fauna in southern California, we investigated the possibility that the holotype of *Auximus pallescens* Chamberlin 1919 might be an immature of *C. guachama*. *Auximus pallescens* was named on the basis of an immature female collected in Claremont near the foothills of the San Gabriel mountain range (Chamberlin 1919); it was synonomized with *C. nevadensis* by Leech (1972). We have examined this holotype as well as the four known *C. nevadensis* specimens (all mature females; three from AMNH, one from DEB) from the Los Angeles Basin and are satisfied that the holotype is not an immature of *C. guachama* and, therefore, no taxonomic name change needs to be made.

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